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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/626,424	07/24/2003	Si Qing Zheng	139153	9846
24587	7590	09/27/2007	EXAMINER	
ALCATEL LUCENT INTELLECTUAL PROPERTY & STANDARDS 3400 W. PLANO PARKWAY, MS LEGL2 PLANO, TX 75075			WILSON, ROBERT W	
			ART UNIT	PAPER NUMBER
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			09/27/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/626,424

Applicant(s)

ZHENG ET AL.

Examiner

Robert W. Wilson

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-13 is/are allowed.
- 6) ☒ Claim(s) 14-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC§102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 14-18 are rejected under 35 U.S.C. 102(B) as being anticipated by Lee (U.S.

Patent No.: 5,301,333)

Referring to claim 14, Lee teaches: a crossbar switch apparatus (Tree Arbiter per Fig 2A) for switching a plurality (N) of input queues (col. 4 line 47-48) to at least one output (output port includes a queue per col. 4 line 18) comprising:

Receiving request generated by said plurality of input queues (A leaf node receives request (col. 3 line 65 to col. 5 line 2) associated with input queues (col. 4 lines 47-48) and hierarchically resolving which input queue's request with respect to said at least one output should be granted (The arbiter determines through the tree hierarchy per Fig 2B which request is a winner or grant for bus with an output port including a queue per col. 4 line 18)

Wherein said receiving request includes a plurality of leaf nodes that correspond to said plurality of input queues (A leaf node receives request (col. 3 line 65 to col. 5 line 2) associated with input queues (col. 4 lines 47-48) , each leaf node including influencing its neighbors leaf node's state if said leaf node receives a Grant signal responsive to a request generated by a corresponding input queue (Upon determining a winning leaf node an inherent grant is sent to the winning node and the neighbor leaf nodes receive a token bits or influencing neighbor's state. The token bits are provided to adjacent or neighboring leaf nodes to insure that the winning leaf node is not immediately serviced again per col. 3 line 65 to col. 5 line 2)

In addition Lee teaches:

Regarding claim 15, wherein said hierarchically resolving which input queue's request with respect to said at least one output queue should be granted comprises a decision tree with said plurality of leaf nodes forming a leaf level (The input queues request for an output queues via winner or grant is determined based upon decision tree per Fig 2A which has leaf nodes (32) which form a leaf level per col. 3 line 65 to col. 5 line 2)

Regarding claim 16, wherein said decision tree comprises $\lceil \log_{\text{Base } N} \rceil$ levels , wherein $N = \lceil \text{Base} \rceil$ to n power for $n > 1$. ($\lceil \log_{\text{Base } N} \rceil$ levels substituting $\lceil \text{Base} \rceil$ to n

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power for N and using identity results in n levels where $n > 1$ and Figure 2A shows n levels where n is greater than 1)

Regarding claim 17, wherein said Base is three and said decision tree comprises a ternary tree (Using the same equation as in claim 16 if the Base is three with n which is greater than 1 resulting and ternary is greater than 1)

Regarding claim 18, wherein said Base is two and said decision tree comprises a binary tree (Using the same equation as in claim 16 if the Base is 2 with n which is greater than 1 resulting and binary is greater than 1)

Claim Rejections - 35 USC§103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (U.S. Patent No.: 5,301,333) in view of Mick (U.S. Patent No.: 3,582,789).

Referring to claim 19, Lee teaches the crossbar switch apparatus for switching a plurality of input queues to at least one output as set forth in claim 18 and wherein said plurality of leaf nodes whose state is controlled by a Grant signal issued to a neighboring leaf (winner (grant) issued to neighbor leaf (winning leaf)

Lee does not expressly call for: Reset-Set flip-flop element whose state is controlled by a signal

Mick teaches: Reset-Set flip-flop element whose state is controlled by a signal (RST flip flow to keep track of change of state based upon incoming signal per col. 4 lines 43-45)

It would have been obvious to add the Reset-Set flip flop element of Mick to the leaf node of Lee in order for the change of state to be implemented in logic.

5. Claim 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (U.S. Patent No.: 5,301,333) in view of Golla (U.S. Patent Pub. No.: US2002/0176431).

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Referring to claim 20, Lee teaches: An arbitration method for resolving contenting among a plurality of requesting entities (N requester) with respect to one common resource (Tree Arbiter per Fig 2A) for switching a plurality (N) of input queues or entities (col. 4 line 47-48) to at least one output (output port includes a queue or resource per col. 4 line 18))

Receiving requests generated by said plurality of requester, said request being propagated by a plurality of leaf nodes corresponding to said plurality of requester (Each leaf node receives request (col. 3 line 65 to col. 5 line 2) associated with input queues or requester (col. 4 lines 47-48. The requests are propagated through each leaf node per col. 3 line 65 to col. 5 line 2) wherein said each leaf node transmits a control signal indicative of its priority status (Leaf nodes redistribute token bits indicating or priority status per col. 3 line 65 to col. 5 line 2) hierarchically resolving which requester's request to said at least one common resource should be granted (The arbiter determines through the tree hierarchy per Fig 2B which request is a winner or grant for bus with an output port including a queue per col. 4 line 18)

And generating by a leaf node that receives a grant signal a control signal for transmission neighboring leaf node for affecting said neighboring leaf node's priority status (Leaf node receives inherent win indication or grant and token bits are provided associated with neighbors priority status per col. 3 line 65 to col. 5 line 2)

Lee does not expressly call for: leaf node to transmit priority signals to neighboring leaf node

Golla teaches: leaf node to transmit priority signals to neighboring leaf node (Leaf nodes can be in a ring per Fig 3 and then would inherently transmit signals between each other)

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the leaf nodes in a ring which inherent transmit signals between each other to the leaf nodes and associated token bits of Lee in order to build a system in which uses ring arbitration.

In addition Lee teaches:

Regarding claim 21, wherein said operation of hierarchically resolving which requester's request with respect to said at least one common resource should be granted is effectuated by a decision tree having a plurality of levels such that said plurality of leaf nodes form a leaf level (The arbiter makes a decision for a request for an output queues via winner or grant is determined based upon decision tree per Fig 2A which has leaf nodes (32) which form a leaf level per col. 3 line 65 to col. 5 line 2)

Regarding claim 22, wherein the decision comprises a binary tree (Figure 2A shows tree which inherently includes a binary tree)

Regarding claim 24, wherein the decision comprises a ternary tree (Figure 2A shows tree which inherently includes a ternary tree)

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Referring to claim 23, the combination of Lee and Golla teaches: the arbitration method for resolving contention among a plurality of requesting entities as set for in claim 21.

Lee does not expressly call for: leaf nodes coupled together in a directed ring.

Golla teaches: leaf nodes coupled together in a directed ring (Leaf nodes can be in a ring per Fig 3)

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the leaf nodes coupled together in the directed ring of Golla to the system of the combination of Lee and Golla in order to build system which is a ring arbitration system.

Allowable Subject Matter

5. Claims 1-14 are allowed. The following is an Examiner's statement of reasons for allowance:

Claims 1-14 are considered allowable since when reading the claims in light of the specification, prior art fails to disclose or suggest the combination of limitations specified in the independent claims including:

“a first plurality of leaf nodes coupled together in a directed ring, wherein at least one of the leaf nodes propagates a request from a corresponding one of the plurality of requester wherein said directed ring forms a leaf level in a hierarchical decision tree having $(\lceil \log_{\text{subscript Base } N} N \rceil)$ levels, wherein $N = \lceil \text{Base} \rceil$ to n power for $n > 1$;

a second plurality of nodes organized in a sub tree having $\lceil \log_{\text{subscript Base } N} N \rceil$ of said hierarchical decision tree, wherein a root level includes a root node and a sub-plurality of intermediate levels each including $\lceil \text{Base} \rceil^I$ internal nodes, wherein $I = 1, \dots, \lceil \log_{\text{subscript Base } N} N \rceil - 1$ ”, as specified in claim 1.

Response to Amendment

6. Applicant's arguments with respect to claim 1-24 have been considered but are moot in view of the new ground(s) of rejection.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

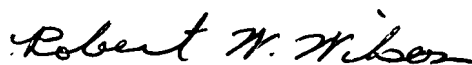
Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert W. Wilson whose telephone number is 571/272-3075. The examiner can normally be reached on M-F (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edan Orgad can be reached on 571/272-7884. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Robert W Wilson
Examiner
Art Unit 2616

RWW
9/20/07